Doctors Without Borders

Q&A Methanol Poisoning

FACT SHEET

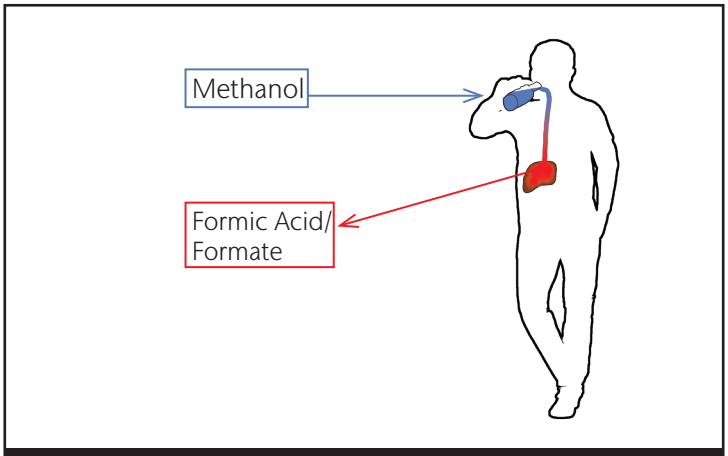
MSF responding at a methanol poisoning outbreak in Kenya.

Photo: MSF

Methanol is a widely available alcohol, used as a solvent in inks and dyes, in chemical synthesis and as fuel. Methanol is cheap; it can be bought in thousands of litres for industrial purposes.

What is methanol poisoning?

Methanol is not toxic itself, but it metabolizes in to a toxic substance: formic acid. Symptoms includes visual disturbances, hyperventilation, dyspnoea, gastrointestinal pain, vomiting, and chest pain. Without specific treatment, people become unconscious and die within a couple of days. See illustration below:



Methanol metabolizes to formic acid in the liver

Why are people dying from methanol poisoning?

Methanol poisoning occurs when methanol is mixed into alcoholic drinks to make more money. The physical effects appear 12-24 hours or even more after intake of methanol if no ethanol is consumed at the same time. Ethanol will delay the symptoms from hours to days. 30ml of methanol is enough to kill a person. People do not know what they are drinking, as they cannot taste the methanol in their drinks.

What is the global problem/burden?

Methanol poisoning is a global public health issue that has too little focus; yearly we see numerous outbreaks with several hundred victims reported in the newspapers. Methanol poisoning is a big imitator, due to it resembling a number of other medical conditions, such as septicaemia, heart attack, stroke, or simply a severe hangover. This makes a correct diagnosis difficult to obtain, and many victims and even outbreaks will go unnoticed – making the true numbers much higher.

Outbreaks can rapidly overwhelm medical facilities as many are in a severe condition. Typically, the health care do not have the capacity or knowledge to diagnose and treat it properly.

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Who is poisoned?

Every year, thousands of people are poisoned by methanol, and in spite of effective treatment, a typical outbreak will kill 20-40% of the victims. An approximately similar percentage of those affected will have permanent visual damage/blindness or brain damage.

Methanol poisonings can happen to anyone, but it usually affects the poorest of the poor, often the breadwinner. Children are also affected, accidently or by drinking illegal alcohol from a young age.

Local alcohol factory in the slums in Kiberia, Nairobi. Photo: MSF

How do you diagnose methanol poisoning?

Diagnosing methanol poisoning in time is challenging, as the symptoms are similar to several other medical conditions. Detailed patient history is very important: Has the patient consumed illegal/bootleg alcohol and/or been drinking together with suspected cases of methanol poisoning? Did he/she get sick after 12-24 hours or more?

Can we expect new diagnostic tools?

An ideal diagnostic tool should be bedside and easy to perform (a single drop of blood from the finger), be quick (reliable answer in 2-3 minutes), have a high sensitivity and specificity, have no need for laboratory equipment, be easy to transport, stable at room temperature and at a reasonable prize.

An expert team at Oslo University Hospital has developed a simple diagnostic tool called MeTOX. Once made available for the market, diagnosis can be a routine test for all.

How do you treat methanol poisoning?

Ethanol (regular alcohol) is the most commonly used antidote. The other antidote is Fomepizole; however, this is more expensive and therefore unavailable in large parts of the world: Typically, a short treatment (if also dialyzed) can cost USD 5000 in the Western part of the world. Used without dialysis it can cost 2-3 times as much.

Buffering the acidosis with bicarbonate is another treatment used. However, this usually only postpone the symptoms, and the problem will not be solved before the metabolism of methanol is blocked by an antidote. If dialysis is available, this will eliminate both methanol and formic acid, as well as correct the metabolic acidosis.

What about access to medicines?

The most important part of the treatment is early administration of antidote. Apart from alcohol (ethanol), the only other antidote is Fomepizole. Fomepizole was included in WHO Essential Medicine List in 2013. It is an established drug in the international guidelines, but the current price makes it unavailable for most countries where people are affected. MSF is advocating reduction of the price of-, and increased access to Fomepizole.

What else can we do to reduce the harmful effects of methanol poisonings?

The lack of basic knowledge on methanol poisoning, and the lack of diagnostic equipment, are the main obstacles. By raising awareness and knowledge on methanol poisoning, we can save thousands of people with relatively small means: First, medical personnel need to become aware of specific treatment and use of antidote. Secondly, increased public awareness will encourage and enable victims to seek timely help. Finally, by tracing the source of the toxic alcohol as early as possible after an incident, we can prevent more people from being poisoned.

The MSF team. Photo: MSF

What is MSF doing globally?

MSF aims to reduce harmful effects of methanol poisoning globally, by strengthening medical emergency knowledge and response capacity. The purpose of the MSF methanol project is to develop a model that brings together experts in methanol poisoning, clinical toxicology and intensive care medicine with a global medical humanitarian organization – namely MSF.

MSF teams are present in countries where methanol poisoning is common, supporting national and local health authorities in responding to methanol outbreaks. In Libya, Kenya, Russia and Indonesia, MSF has trained several hundred local MoH staff, several local NGO's and MSF personnel. The MSF team also make emergency preparedness plans (EPREP), and develops and implements locally adapted treatment protocols and health information posters. MSF has directly intervened in three large outbreaks; more than 1000 patients were poisoned in Libya, March 2013, with a reported case fatality rate of 10%. In Kenya, in 2014, two outbreaks resulted in 341 and 126 patients, with case fatality rates of 29% and 21%.

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